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BRIDGEPORT BRIDGE
Spanning the Wisconsin River
at U.S. Highway 18
Bridgeport
Crawford County
Wisconsin

HAER No. WI-54

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Rocky Mountain Regional Office
National Park Service
Department of the Interior
P.O. Box 25287
Denver, Colorado 80225-0287

HISTORIC AMERICAN ENGINEERING RECORD
BRIDGEPORT BRIDGE

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Note: For shelving purposes at the Library of Congress, Town of Bridgeport, Crawford County was selected as the "official" location for the Bridgeport Bridge documentation. However, the bridge spans two towns and two counties, and is also located in the Town of Wyalusing, Grant County, Wisconsin.

Location: Spanning the Wisconsin River at U.S. Highway 18.

UTM: A (southeast end): 15:659050:4762165
B (northwest end): 15:658625:4762900

Quad: Bagley, Wisconsin-Iowa.
Bridgeport, Wisconsin.

Date of Construction: 1931.

Designer and Builder: Designed by the Wisconsin State Highway Commission, C.H. Kirsch, Bridge Engineer. Fabricated by Steven Bros. Builder was Schaffer Construction Company.

Present Owner: None.

Present Use: Demolished in 1990.

Significance: In 1983, the Bridgeport Bridge, comprised of seven truss spans, was one of five remaining Pennsylvania trusses in the State of Wisconsin. However in the subsequent ten years, four of these uncommon truss bridges including the Bridgeport Bridge have been demolished. The Bridgeport Bridge was impressive in its overall length of 3400 feet, including one span over the slough, an intervening island, and nine spans over the main channel. Together with the Marquette-Prairie du Chien Bridge over the Mississippi River, begun in the same year, the Bridgeport Bridge represented the key to an improved transportation link between Iowa and Wisconsin.

Project Information: The documentation of the Bridgeport Bridge was begun in 1988 by Robert S. Newbery, Wisconsin Department of Transportation Staff Historian, in accordance with the Memorandum of Agreement, and completed in 1993 with the assistance of Amy A. Ross, Mead & Hunt, Inc.'s Architectural Historian.

HISTORICAL BACKGROUND¹

The town of Bridgeport occupies a ravine on the north side of the Wisconsin River approximately 5 miles above its confluence with the Mississippi River. At this point, bluffs face the river with little floodplain. Directly across the Wisconsin River from Bridgeport is the Lane Creek valley which gently ascends over a several mile grade to an upland segment known as the Military Ridge. This advantageous site for a river crossing was the location of considerable prehistoric human activity and was chosen for a crossing when the first military road in the area was surveyed in 1832. The road connected Fort Crawford at Prairie du Chien with Fort Howard at Green Bay. This crossing site, located 7 miles to the southeast of Prairie du Chien, was being called "Bridgeport" as early as 1859.

Early French explorers were in this part of Wisconsin in the 17th century but the records are fragmentary and cannot document their presence at Bridgeport. However, the necessity for a land route paralleling the Mississippi River and the suitability of Bridgeport as a Wisconsin River crossing site for such a route increases the possibility that the ravine was utilized by early European explorers. Permanent white settlement at Prairie du Chien is documented as early as 1781 when three French traders purchased land there from the Indians. If the Bridgeport site was used early on by Europeans, cultural remains from this early occupation may be buried under recent historic fill which in some places reaches 19 feet in depth.

The earliest documentation for the use of the Bridgeport area for a ferry crossing is 1831. A map drawn by Lieutenant Alexander J. Center in 1832, in conjunction with his survey of the planned military route, indicated "Brunet's Ferry" at this site, as well as a farmstead on the bluff top to the west—probably also owned by Jean Brunet. The foundation of an old stone structure has been found at this site, and may be the remains of Brunet's farmstead.

An earlier ferry crossing appears to have been located about two miles downstream from Bridgeport, at a place known as Petit Gris. The ferry at Petit Gris may have been in use by 1814, and continued until 1857 when the first Bridgeport bridge was built. Both the Petit Gris and Bridgeport ferries began as simple pole ferries. In 1839, following a change in ownership, horsepower was added to the Bridgeport ferry and passenger stage service provided. In 1848, a bridge was built across the slough south of the main channel. This bridge shortened the ferry crossing by avoiding navigation around an island.

Permanent settlement of the ravine began in the mid-1850s with land divided into lots at that time. This settlement may have been spurred by the 1854 incorporation of a company to build a bridge across the Wisconsin River. The first bridge across the Wisconsin River at Bridgeport was completed in 1857. That

¹ The information on the history of Bridgeport and early Wisconsin River crossings was taken from Lynn A. Rusch and John T. Penman, Transportation Archaeology in Wisconsin: the 1984 Field Season, Wisconsin Department of Transportation: Archaeological Report 11 (Madison, Wisc., May 1985) 21-27. Additional historical background was obtained from C.W. Butterfield and George A. Ogle, eds., History of Crawford and Richland Counties, Wisconsin (Springfield, Ill.: Union Publishing Company, 1884) 559-63.

same year the Milwaukee and Mississippi Railroad opened a line from Mazomanie to Prairie du Chien with a flagstop at Bridgeport. The railroad followed the north bank through Bridgeport to the confluence of the Wisconsin River, and then turned north alongside the Mississippi toward Prairie du Chien. These two new transportation facilities attracted business to this community as Bridgeport became the center of commercial activity, serving the surrounding countryside.

By 1867, Bridgeport had become a major shipping point for cattle, grain, lumber, and building stone. A stockyard was established by 1878 and operated into the 20th century. Wednesday was "stock day" in Bridgeport with farmers coming from the country on both sides of the Wisconsin River to sell their cattle. As many as a dozen railroad cars of stock per day were shipped out of Bridgeport following the opening of the bridge. The town was also the shipping point for lumber from a nearby sawmill and stone from four local quarries. Bridgeport was included in the town of Prairie du Chien until 1872, when it was recognized as an independent community.

The bridge was a privately owned toll bridge from its opening in 1857 until shortly before its replacement by the steel span in 1931. Members of the original company proposing to build the bridge in 1854 included: E.W. Pelton, president; William E. Parish, vice president; B.F. Fay, secretary; I.P.P. Gentil, treasurer; with H.L. Dousman, Alfred Brunson and B.W. Brisbois among the directors.² Together they put up \$30,000, \$10,000 of which was taken in stock by the town of Prairie du Chien and for which bonds were issued, toward its completion. In 1865, James Hall became the first individual owner of the toll bridge. George M. Dickinson was the next sole proprietor. In 1874, a fire destroyed various structures in Bridgeport, and caused some damage to the bridge.

John Lawler, an engineer, acquired sole possession of the bridge at Bridgeport in 1874 following the fire, and at least partially rebuilt it. Lawler had that same year obtained patent number 154,055 for his floating drawbridge improvements but it is not clear if these were utilized on this bridge. Some other modifications were also made after ice damaged the bridge in 1892. It is unclear whether the bridge was ever completely rebuilt or simply repaired and modified over the years.

In its final form, the early Wisconsin River structure had four spans, with the center two being covered and supported on stone piers. The southern "span" was a trestle, and the northern span was a Howe drawspan which pivoted horizontally on its on-shore footing while the river end was supported by suspension cables.³ It seems likely that the location of the bridge, with the northern footing at the end of main street and most of Bridgeport within a few hundred yards, was essentially the same from 1857 forward.

Plans for a new steel truss bridge were initiated by the State Highway Commission (SHC) in 1926. In 1930, the SHC purchased the toll bridge from its last private owner, Harry Lathrop, for \$15,000. In its last year of service, from May 1930 to May 1931, the state operated this bridge free of charge. Planned as a free facility,

² H.L. Dousman and B.W. Brisbois were amongst the original settlers of Prairie du Chien, and are discussed in standard references for the area; see Peter L. Scanlan, Prairie du Chien: French, British, American (Menasha, Wisc.: George Banta Publishing Co., 1937) and John B. Gregory, ed., Southwestern Wisconsin: A History of Old Crawford County, vol. 1 (Chicago: S.J. Clarke Publishing Co., 1932).

³ Rusch and Penman, cover photograph; and M.G. Davis, A History of Wisconsin Highway Development, 1835-1945 (Madison, Wisc.: Wisconsin Department of Transportation) 98.

the new bridge was to be located about 250 feet to the west of the earlier structure and elevated to allow for unobstructed river traffic and to clear the railroad tracks that followed the Wisconsin River. Construction began in the winter of 1930-31 and was supervised by C.H. Kirsch, bridge engineer of the State Highway Commission. By February 1931, the Schaffer Construction Company had largely completed the piers and was preparing to erect the steel trusses.⁴ The concrete deck was poured in late April.

The new bridge opened on May 24, 1931.⁵ On June 6, 1931, the Bridgeport Bridge was formally dedicated. A 45-piece band was the highlight of the festivities. C.H. Kirsch, construction supervisor and SHC bridge engineer, spoke at the ceremony.⁶

The Bridgeport Bridge, together with the just-started new bridge across the Mississippi at Prairie du Chien, was regarded as a key link in the transportation route connecting Iowa to southwestern Wisconsin. Completion of the two bridges was also seen as an important step toward securing a hard-paved, all weather roadway, described in newspapers of the day as a "through concrete route," on Highway 18. At the time, this highway was still a dirt road along the seven-mile stretch between Bridgeport and Prairie du Chien.

The Bridgeport Bridge connected directly to the bluff top on the north side of the river, causing highway traffic to bypass the businesses in the ravine below. When a second, more devastating fire in November, 1936 destroyed much of the town, the incentive to rebuild Bridgeport commercial and residential structures was not there. The railroad depot and trestle, lost in this fire, were rebuilt, but service to Bridgeport was terminated soon after—replaced by the depot at Prairie du Chien. The last commercial operation left in 1968, and today only a handful of residences remain.

ENGINEERING DESCRIPTION

The Bridgeport Bridge was a ten span structure whose overall length was about 3400 feet. It was designed in 1930 by the Wisconsin State Highway Commission. It featured 7 Pennsylvania truss spans of approximately 232 feet each.⁷ In addition, there were three beam spans at the north end. The overall width was 27'-6".⁸ The roadway width was 23'-0" with no sidewalks or shoulders. The vertical clearance was 15'-1".

⁴ The fabricator of the steel trusses is identified on the bridge plate as Steven Bros. of Minneapolis, Minnesota. No additional information on Steven Bros. has been found. Sources consulted include: Victor Darnell, A Directory of American Bridge-Building Companies, 1840-1900, reprinted as Society for Industrial Archeology, Occasional Publication No. 4 (Washington, D. C., 1984); and Wisconsin State Gazetteer and Business Directory, 1891-92, 1895-96, 1909-10, 1913-14, 1915-16, 1919-20 editions (Chicago: R. L. Polk & Co.); Fredric L. Quivik, "Montana's Minneapolis Bridge Builders," Industrial Archeology 10.1 (1984).

⁵ Demolition of the old covered bridge began the following day.

⁶ Information on the construction of the new bridge and demolition of the old covered toll bridge was obtained from articles in the Prairie du Chien Courier, 1928-31, on microfilm at the State Historical Society of Wisconsin, Madison, Wisconsin.

⁷ Actual span lengths are: 232'-0", 232'-11", 3 @ 232'-9", and 231'-9" for trusses; 30'-3", 31'-0" and 32'-0" for beam spans.

⁸ The bridge card lists overall width as 24 feet. The plans show 25 feet 10 inches from center to center of the trusses. The cover plates are 20 inches. Therefore, I computed the overall width to be 27 feet 6 inches.

One of the truss spans was over the slough to the south of the main channel of the Wisconsin River and was separated from the other spans by a 1000-foot wide island. This span was given a separate identification number (B-22-829) by the Wisconsin Department of Transportation in recent years, but it was Span No. 1 on the State Highway Commission's plans for "The Bridgeport Bridge." The other nine spans included six Pennsylvania trusses (Spans No. 2-7 on the original plan) and three short steel beam spans (Spans No. 8-10). These spans crossed the main channel of the Wisconsin River, a tributary stream, and the former Chicago, Milwaukee, St. Paul & Pacific Railroad tracks. These spans were set on tall concrete piers and were on a 4.95 percent grade.

The inclined end-post and upper chord of the truss spans consisted of 15-inch double upright channels with a 20-inch cover plate and X-lacing. The lower chord was comprised of two back-to-back angles tied with batten plates (forming a "+" in section). Vertical members of the bridge were formed from two channel beams riveted together with V-lacing. The diagonal members were two back-to-back angles tied with batten plates (forming an "H" in section). The steel members had riveted connections.

The floor system was composed of rolled I-beams riveted to gusset plates at panel points, rolled I-beam stringers, and a poured concrete deck. The substructure consisted of concrete abutments and piers, the largest of which was 90 feet high and required almost 1000 cubic yards of concrete. The south abutment rested on a fixed shoe bearing, while a rocker was used on the north end.

The Pennsylvania truss was a "major advance in strengthening the Pratt truss," a type which had become one of the two predominant truss types in the United States in the late nineteenth century. The Pennsylvania truss's distinctive features, included an inclined top chord for economy of material and panel sub ties or sub struts for greater strength. These features were a response to the increasing live loads of railroad locomotives and rolling stock. The Pennsylvania truss, the name of which is derived from its extensive use on the Pennsylvania railroad, is generally found in the United States with lengths of 250 to 600 feet.⁹ None of Wisconsin's Pennsylvania trusses are of such length, however, and the trusses of the Bridgeport Bridge are among the longest known to have been built in the state.

In 1983, there were five other Pennsylvania truss bridges in Wisconsin. The Melrose Bridge, built in 1921, and the Hemlock Bridge (HAER No. WI-5), built in 1914, were determined to be eligible for the National Register of Historic Places. Both bridges, which consisted of single spans of about 200', have since been replaced. A third, the Cobban Bridge, which consisted of two spans of 241' each crossing the Chippewa River in the Town of Arthur, Chippewa County, has been identified in the statewide inventory as potentially eligible. Of these five, the Bridgeport Bridge was the last to be constructed. The Pennsylvania truss was not a popular type in Wisconsin. Instead, the State Highway Commission promoted the use of the Warren pony and Pratt overhead trusses.

⁹ American Association for State and Local History Technical Leaflet 95, History News, Vol. 32, No. 5, May 1977; T. Allen Comp and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," pp. 5-7. See also J.A.L. Waddell, Bridge Engineering (1916; New York: J. Wiley & Sons, Inc., 1921) 25, 268, 469 and 478; J.A.L. Waddell, Economics of Bridgework (New York: J. Wiley & Sons, Inc., 1921) 176-77; J.B. Johnson, C.W. Bryan, and F.E. Turneure, The Theory and Practice of Modern Framed Structures (New York: J. Wiley & Sons, Inc., 1905) 212; Henry G. Tyrrell, History of Bridge Engineering (Chicago: published by the author, 1911) 184-92.

TECHNICAL DATA

Spans:

7 Pennsylvania truss main spans, each approximately 232'

Connection Type:

Riveted

Substructure:

concrete abutments and piers

Overall length x width:

Span No. 1 (B-22-829): 234' 4" x 24

Spans Nos. 2-10 (B-12-850): 1489' 11" x 24'

Inclined End-Post/Upper Chord:

Double upright channels (15") with cover plate (20") and X-lacing

Lower Chord:

Double back-to-back angles tied with batten plates (forming "+" in section)

Verticals:

Double channels with V-lacing on both sides

Diagonals:

Double back-to-back angles tied with batten plates ("H" in section)

Floor System:

Rolled I-beams riveted to gusset plates at panel points; rolled I-beam stringers; poured concrete deck

Bracing:

Top: double angles with V-lacing; double back-to-back angles with V-lacing

Bottom: angles

Portal: Double angles with V-lacing in "W" pattern

Bearings:

Fixed shoe on each south end; rocker on each north end

BIBLIOGRAPHY

- Butterfield, C.W. and George A. Ogle, eds. History of Crawford and Richland Counties, Wisconsin. Springfield, Ill.: Union Publishing Company, 1884.
- Comp, T. Allen and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," American Association for State and Local History Technical Leaflet 95. Published in History News 32.5 (1977).
- Courier [Prairie du Chien], articles from 1928-31. On microfilm at the State Historical Society of Wisconsin, Madison, Wisconsin.
- Darnell, Victor. A Directory of American Bridge-Building Companies, 1840-1900. Reprinted as Occasional Publication No. 4., Society for Industrial Archeology, 1984.
- Davis, M. G. A History of Wisconsin Highway Development, 1825-1945. Madison, Wisc.: Wisconsin Department of Transportation, 1989.
- Gregory, John B., ed. Southwestern Wisconsin: A History of Old Crawford County, vol. 1. Chicago: S.J. Clarke Publishing Co., 1932.
- Johnson, J.B., C.W. Bryan, and F.E. Turneure. The Theory and Practice of Modern Framed Structures. 8th Ed. New York: J. Wiley & Sons, Inc., 1905.
- Scanlan, Peter L. Prairie du Chien: French, British, American. Menasha, Wisc.: George Banta Publishing Co., 1937.
- Quivik, Fredric L. "Montana's Minneapolis Bridge Builders." Industrial Archeology 10.1 (1984).
- Rusch, Lynn A. and John T. Penman. Transportation Archaeology in Wisconsin: the 1984 Field Season. Wisconsin Department of Transportation: Archaeological Report 11. Madison, Wisc., May 1985.
- Tyrrell, Henry Grattan. History of Bridge Engineering: From the Earliest Times to the Present Day. Chicago: published by the author, 1911.
- Waddell, James A.L. Bridge Engineering. 1st ed., 1916. New York: J. Wiley & Sons, 1925.
- _____. Economics of Bridgework: A Sequel to Bridge Engineering. New York: J. Wiley & Sons, 1921.
- Wisconsin State Gazetteer and Business Directory, 1891-92, 1895-96, 1909-10, 1913-14, 1915-16, 1919-20 editions. Chicago: R. L. Polk & Co..

Fig. 1

USGS Quad: Bridgeport, Wisconsin (7.5 minute series)
northwest end: 15:658625:4762900

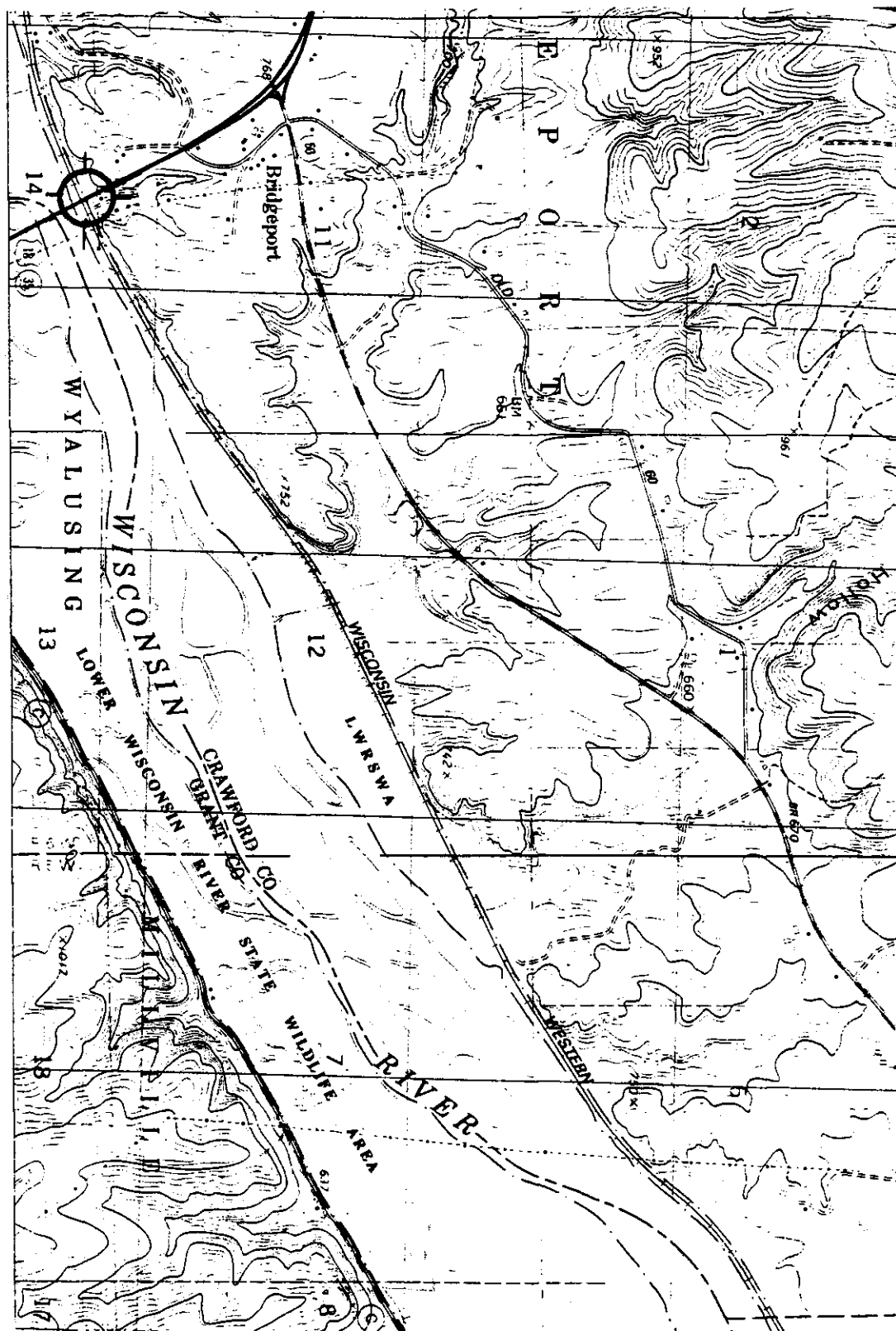


Fig. 2 USGS Quad: Bagley, Wisconsin-Iowa (7.5 minute series)
southeast end: 15:659050:4762165

